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FOR: APPARATUS AND METHOD FOR INTERPOLATING BINARY
PICTURES, USING CONTEXT PROBABILITY TABLE

APPENDIX

1. (Once amended) A method for interpolating an original picture in a frame unit (a binary picture: BAJ3) [binary pictures] by using context probability table set previously [probable values] in order to reconstruct the original [binary] picture in the frame unit having low resolution as the picture having high resolution through an up-sampling, said method comprising the steps of:

dividing said binary picture in the frame unit into a plurality of blocks (each having a size of 8x8 pixels);

extending each of said plurality of blocks divided to a double [the block to a] size [of the picture presented in the up-sampling];

[detecting a position of said block on the binary picture;

bordering the block according to the detected block position;]

forming a context template for an interpolating pixel in each of the extended blocks [the bordered block];

getting indexes of the context template to obtain [and obtaining] a probability value indicating whether or not a [of said interpolating] pixel value is detected and obtaining [from a

context probable table through a use of the context] the probability value of the interpolating pixel from the context probability table set previously by a use of the indexes of the context template obtained; and

deciding [a value of] the interpolating pixel value ('0' or '1') based on the context probability [probable] value [of] obtained from the interpolating pixel.

2. (Canceled)

3. (Canceled)

4. (Once Amended) The method of claim [1] 22, wherein said bordering step comprises the steps of:

copying the uppermost row of [a current] the extended block and thereby forming a top border in case that [said current] the extended block is [the uppermost block of inputted binary] positioned on the frame top side border of the original picture in the frame unit, and copying [known] the values of pixels positioned on the right or left side [of pixels] for unknown [values] pixels on said top border;

constructing a left border by using the leftmost column of the extended [current] block in case that said extended [current] block is positioned on the frame side border of the original [the leftmost block of the inputted binary] picture in the frame unit, and copying the [known] values of pixels positioned [situated] on the upper or lower side for unknown [of] pixels [for unknown values] on said left border;

[determining a corner border as '0' or '1';] and

forming the top border with the lowermost row of upper adjacent block[,] and the left border with the rightmost column of left block neighboring to the extended [current] block, in

case that said extended block is not positioned on the frame border of the original picture in the frame unit [and the corner border with a rightmost and lowermost pixel value of the left or upper block adjacent to the current block, in case that said current block is not the uppermost block and the leftmost block of the inputted binary picture].

5. (Once Amended) The method of claim 1, wherein the context template forming step constructs the context template for a part having no pixels by copying neighboring pixels or determining a voluntary value, in case that [it is formed in the bordered block] the context template is constructed for pixels of 16 columns or 16 rows [for a pixel corresponding to the current block and the context template for a pixel of the rightmost column or lowermost row].

9. (Once Amended) The method of claim [8] 1, wherein the block extending step comprises[said method in a use of the context template including] the steps of:

[executing] interpolating pixels horizontally by using a horizontal [interpolation by performing the third step to the sixth step through a use of a horizontal] context template; and

[performing a vertical interpolation] interpolating pixels [by executing the third step to the sixth step through a use of] vertically by using a vertical context template.

Claim 11 (cancelled)

Claim 12 (cancelled)

Claim 13 (cancelled)

Claim 14 (cancelled)

19. (Once amended) The apparatus of claim [15] 24, wherein said bordering means copies column and 1 row of each of the divided blocks [its own leftmost column and uppermost

row] on the [top and] left and upper side of the divided blocks, respectively [to thereby] and perform [a] the bordering, for the dived blocks, in case that the blocks divided [situated on the object] in said blocks dividing means exist on the outermost of the original pictures in the frame unit.

20. (Once amended) The apparatus of claim [18] 24, wherein said copy means borders a divided block with [the rightmost and lowermost] pixel values in 8 rows of its left and top block if [a] the divided block exists on the top and left side of the [current] block to be bordered divided in said block dividing means and borders the divided block with a value "0" [and borders with the exterior of the object] if the divided block does not exist on the top and left side [of the current block] thereof.

21. (Once amended) The apparatus of claim [18] 24, wherein said probability detecting means compares the probability [probable] value [of the object interior] read and gotten from said probability [probable] table referring means with 0.5; controls so that said interior/exterior interpolating means interpolates a value "0" for the respective pixels on [of] the bordered block [as the object interior value], in case the probability [probable] value [of the object interior] is more than 0.5; and controls so that said interior/exterior interpolating means interpolates a value "0" for the respective pixels on [of] the bordered block [as the object exterior value], in case the probability [probable] value [of the object interior] is less than 0.5.

Claim 22 (cancelled)

24. (Once Amended) An apparatus having block dividing means, bordering means, and horizontal and vertical interpolation means and for interpolating [binary pictures] an original picture in a frame unit

(a binary picture: BAB) by using a context [probable] probability table set previously order to reconstruct the original [binary] picture in the frame unit having low resolution as the picture having high resolution through an un-sampling, [wherein said apparatus comprises block dividing means, bordering means, and horizontal/vertical interpolating means; and wherein] said apparatus comprising:

said bordering means [comprises]: being comprised of block position detecting means for detecting a position of each of the divider blocks from said block dividing means in the original [receiving an address of the current block on the inputted binary] picture [and detecting a position of the current block;] in the frame unit, copy means for receiving the position of the [current] divided block outputted from said block position detecting means and bordering the block[s] of a given size on the top, left and upper side and left side of the [current] block to be bordered; and memory for storing the blocks bordered from said copy means and outputting the information on the neighboring blocks of the [current] block to be bordered to said copy means; and

said horizontal/vertical interpolating means [comprises:] being composed of context calculating means for receiving the bordered blocks in said bordering means and calculating context indexes for respective pixels[;] of the bordered blocks [probable] probability table referring means for receiving the context indexes from said context calculating means[, and reading and getting [probable] probability values corresponding to the index on/from the context [probable] probability table set [stored] previously[,], probability detecting means for detecting whether or not the [probable] probability value [for an object interior] read and gotten on/from said [probable] probability table referring means is more than 0.5[;], and interior/exterior interpolating means for interpolating a [an object interior value or an object exterior] value "0" or "1" for the respective pixels on the bordered block in response to the [a] detection result signal of said probability detecting means.

Claim 25 (cancelled)

Claim 26 (cancelled)

Claim 27 (cancelled)

Claim 28 (cancelled)

Claim 29 (cancelled)

30. (New) The method of claim 1, further comprising the steps of: comparing the extended block with the original picture in the frame unit and detecting the position of the block; and selectively bordering said plurality of blocks based on the detected position.